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A new *Trametes* species from Southwest China

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Abstract — A new polypore, *Trametes cystidiolophora* sp. nov., found in Yunnan Province, southwest China, is described and illustrated. The new species is characterized by its pale grayish brown to pale cinnamon-buff pileus with distinctly concentric zones and radial veins, uneven pore surface, cylindrical to more or less allantoid basidiospores (6.6–9.2 × 2.4–3 μm), abundant cystidioles present in the hymenium, and skeleto-binding hyphae that become swollen in KOH.

Key words — *Polyporaceae*, taxonomy, wood-rotting fungi

Introduction

The genus *Trametes* Fr. is characterized by having pileate basidiocarps, a trimitic hyphal system with clamp connections on generative hyphae, hyaline and thin-walled basidiospores that are negative in Melzer's reagent, and causing white rot (Gilbertson & Ryvarden 1986, Ryvarden & Gilbertson 1994, Lindblad & Ryvarden 1999, Núñez & Ryvarden 2001). About 50 species in the genus have been reported in the world (Kirk et al. 2008), including 23 species previously recorded from China (Zhao & Zhang 1991, Teng 1996, Zhao 1998, Dai et al. 2007, Dai 2009, Dai & Yuan 2010).

During the study on wood-decaying fungi from Gaoligongshan Nature Reserve, Yunnan Province, southwest China, a species of *Trametes* was found that could not be identified to any known species. It is described in the present paper as *Trametes cystidiolophora*.

Materials and methods

The studied specimens are deposited in herbaria as cited below. The microscopic procedure follows Dai & Penttilä (2006). Sections were studied at

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magnification up to ×1000 using a Nikon Eclipse E 80i microscope and phase contrast illumination. Drawings were made with the aid of a drawing tube. To present spore size variation, the 5% of measurements excluded from each end of the range are given in parentheses. Abbreviations include IKI = Melzer's reagent, IKI– = negative in Melzer's reagent, KOH = 5% potassium hydroxide, CB = Cotton Blue, CB– = acyanophilous, L = mean spore length (arithmetic average of all spores), W = mean spore width (arithmetic average of all spores), Q = variation in the L/W ratios between the specimens studied, and n = number of spores measured from given number of specimens. Special colour terms follow Anonymous (1969) and Petersen (1996).

Taxonomy

Trametes cystidiolophora B.K. Cui & H.J. Li, **sp. nov.** Fig. 1

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Carpophorum annuum, pileatum, imbricatum; facies pororum bubalina vel reseo-bubalina, pori rotundi vel angulati, 2–3 per mm. Systema hypharum trimiticum, hyphae generatoriae hyalinae, fibulatae, hyphae skeletales contexti 2.8–6.2 µm; sporae hyalinae, cylindricae, IKI–, CB–, 6.6–9.2 × 2.4–3 µm.

Type — China. Yunnan Province, Baoshan, Gaoligongshan Nature Reserve, on dead angiosperm tree, 25.X.2009 Cui 8084 (**holotype** in BJFC); Cui 8087 (**isotype** in BJFC).

Etymology — *cystidiolophora* (Greek): = "cystidiole-bearing", referring to the abundant cystidioles in the hymenium.

Fruitbody — Basidiocarps annual, pileate, usually imbricate, without odor or taste when fresh, corky and light in weight when dry. Pileus dimidiate to semicircular, projecting up to 4.2 cm, 7.3 cm wide, 7 mm thick at the base; pileal surface pale grayish brown to pale cinnamon-buff when dry, glabrous, distinctly concentrically zoned and radially veined; margin sharp, wavy or incised in rounded lobes, deflexed with age. Pore surface cream-buff to pinkish buff when dry, slightly shiny; sterile margin white to cream, up to 2.5 mm wide; pores round to angular, 2–3 per mm, dissepiments thin, entire at margin and dentate to hydnoid with age. Context cream, corky, up to 3 mm thick. Tubes cream to cream-buff, corky, up to 4 mm long.

Hyphal structure — Hyphal system trimitic; generative hyphae with clamp connections; skeleto-binding hyphae dominant, thick-walled to subsolid, IKI–, CB–, become swollen in KOH.

Context — Generative hyphae infrequent, hyaline, thin-walled, moderately branched, 2–3.7 µm in diam; skeletal hyphae dominant, hyaline, slightly thick-walled to subsolid, frequently branched, and the slightly thick-walled skeletal hyphae often collapsed, interwoven, 2.8–6.2 µm in diam; binding hyphae hyaline, thick-walled to almost solid, frequently branched, interwoven, 1.7–3 µm.

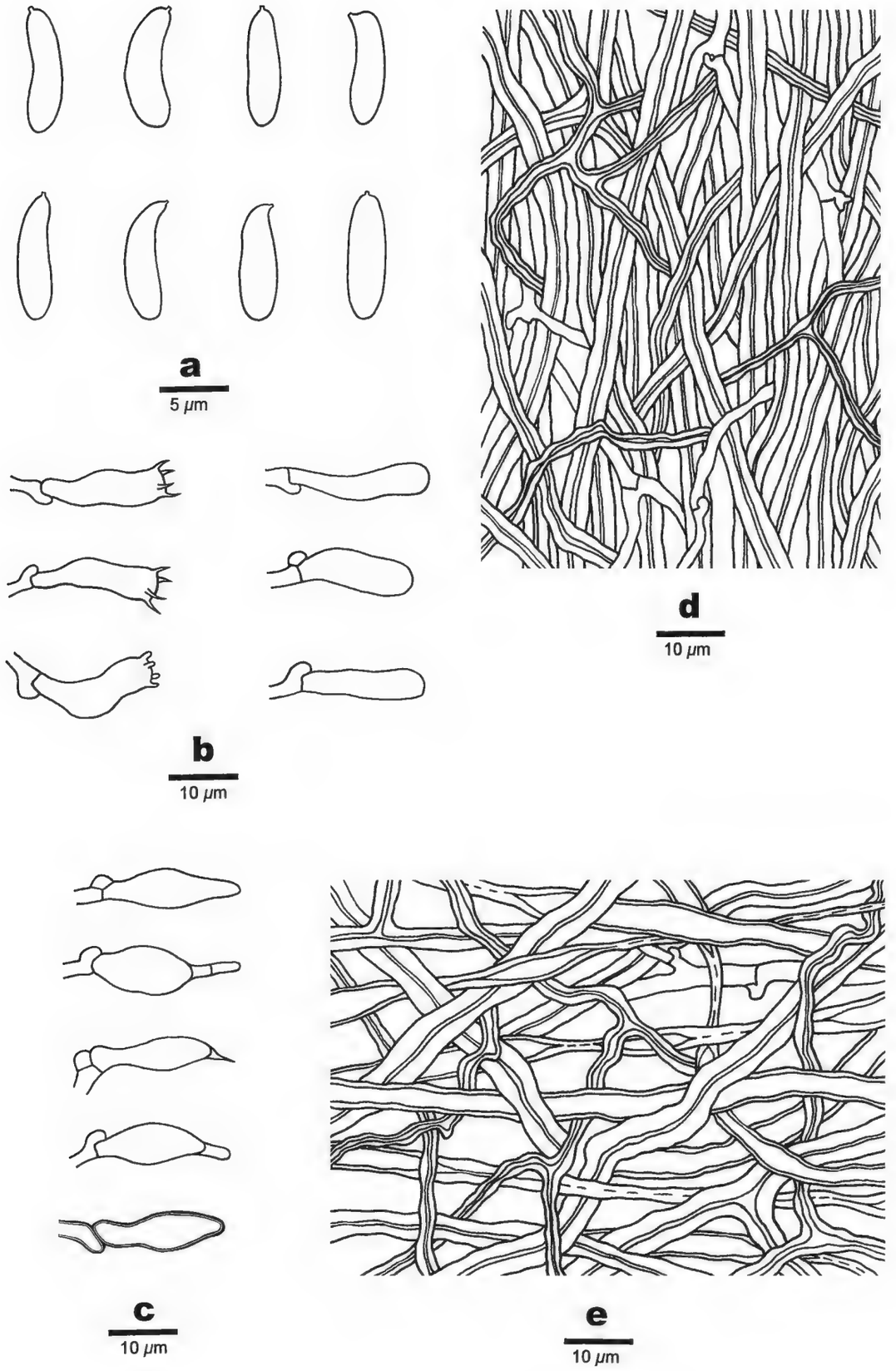

FIG. 1. Microscopic structures of *Trametes cystidiolophora* (drawn from the holotype).
a: Basidiospores. b: Basidia and basidioles. c: Cystidioles.
d: Hyphae from tube trama. e: Hyphae from context.

Tubes — Generative hyphae infrequent, hyaline, thin-walled, frequently branched, 1.7–3 μm in diam; skeletal hyphae dominant, hyaline, thick-walled to subsolid, occasionally branched, interwoven, 2.3–5 μm; binding hyphae hyaline, flexuous, thick-walled to almost solid, frequently branched, interwoven, 1.6–3.1 μm. Cystidia absent, cystidioles abundant in the hymenium, fusoid, hyaline, mostly thin-walled, occasionally slightly thick-walled, some with one or two septa, 16–24 × 4–6 μm; basidia clavate, with four sterigmata and a basal clamp connection, 16–18.2 × 5–7.8 μm; basidioles in shape similar to basidia, but slightly smaller.

Spores — Basidiospores cylindrical, occasionally slightly curved to more or less allantoid hyaline, thin-walled, smooth, IKI–, CB–, (6–)6.6–9.2(–10) × (2.2–)2.4–3(–3.3) μm, L = 8.1 μm, W = 2.79 μm, Q = 2.78–3.04 (n=60/2).

Type of rot — White rot.

Remarks — *Trametes cystidiolophora* is characterized by its pale grayish brown to pale cinnamon-buff pileal surface with distinctly concentric zones and radial veins, uneven pore surface, cylindrical to more or less allantoid basidiospores (6.6–9.2 × 2.4–3 μm), and abundant cystidioles present in the hymenium. Moreover, its skeleto-binding hyphae become swollen in KOH.

Trametes cystidiolophora may be confused with *Fomitopsis palustris* (Berk. & M.A. Curtis) Gilb. & Ryvarden, which produces similar basidiospores, but the two species can be separated by the rot type. *Trametes cystidiolophora* causes a white rot, while *Fomitopsis palustris* causes a brown rot.

Trametes maxima (Mont.) A. David & Rajchenb. is similar to *T. cystidiolophora* by sharing similar uneven pore surface and pore size (2–3 per mm), but *T. maxima* differs in its tomentose to hirsute pileal surface and smaller basidiospores (4.5–5.5 × 2–2.5 μm, Gilbertson & Ryvarden 1986).

Trametes cotonea (Pat. & Har.) Ryvarden, which has similar basidiospores (7–10 × 2.5–3.5 μm) as *T. cystidiolophora*, is usually effused-reflexed, paper thin, and flexible and its pores are smaller (3–4 per mm, Ryvarden & Johansen 1980).

Trametes glabrata (Lloyd) Ryvarden, which shares with *T. cystidiolophora* a glabrous pileus, uneven pore surface, and similar pore size. However, *T. glabrata* has distinctly smaller basidiospores (4–5 × 1–1.5 μm, Ryvarden 1992).

Cystidioles are also present in several other reported species in *Trametes*, such as *T. gibbosa, T. hirsuta, T. ljubarskyi,* and *T. pubescens* (Gilbertson & Ryvarden 1986, Núñez & Ryvarden 2001), but the cystidioles in all these species are infrequent and without septa. The fact that its cystidioles are abundant in the hymenium and that some are septate make *T. cystidiolophora* unique in *Trametes*.

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